Patent claims

1. A planar optical circuit, comprising:

at least one monolithic or hybrid integrated optical component associated with a generally planar substrate;

a waveguide structure configured to transfer an optical signal associated with the optical component; and

a scattered light system operable to influence a propagation of scattered light from the optical component in a targeted manner, the scattered light system integrated into the generally planar substrate.

2. The circuit of claim 1, wherein the scattered light system is operable to capture, deflect, divert, or absorb the scattered light in a targeted manner.

3. The circuit of claim 1, wherein the scattered light system comprises an additional waveguide, one end of which is arranged in the vicinity of a scattered light source.

4. The circuit of claim 3, wherein the optical component comprises a Mach-Zehnder interferometer with an input port and an output port, and wherein the additional waveguide is arranged in the vicinity of the output port of the Mach-Zehnder interferometer.

5. The circuit of claim 4, wherein the additional waveguide is arranged in a substantially symmetrical arrangement in the region of the output port on both sides of the output waveguide of the Mach-Zehnder interferometer.

6. The circuit of claim 3, wherein the additional waveguide extends in a bent or an S-shaped fashion.

7. The circuit of claim 6, wherein the additional waveguide comprises:

a first, straight region that extends substantially parallel to the waveguide structure; and

an S-shaped region that adjoins the first straight region.

8. The circuit of claim 3, further comprising a photodiode, wherein an other end of the additional waveguide is terminated by the photodiode.

9. The circuit of claim 8, further comprising an evaluation unit, wherein the photodiode is coupled to the evaluation unit, and wherein the evaluation unit indirectly determines the optical power of the signal at the output of the optical component using the detected scattered light.

10. The circuit of claim 1, wherein the scattered light system comprises a scattered light-absorbing structure associated with the generally planar substrate.

11. The circuit of claim 10, wherein the scattered light-absorbing structure comprises a trench within the generally planar substrate, wherein the trench is filled with a light absorbent substance.

12. The circuit of claim 11, further comprising a plurality of waveguides, and further comprising a plurality of trenches as light-absorbing structures arranged and extending generally parallel to and between the plurality of waveguides, respectively.

13. The circuit of claim 1, wherein the scattered light system comprises a scattered light-reflecting structure associated with the generally planar substrate.

14. The circuit of claim 13, wherein the scattered light-reflecting structure comprises a trench within the generally planar substrate.

15. The circuit of claim 13, further comprising a plurality of waveguides, and further comprising a plurality of trenches as light-reflecting structures arranged and extending generally parallel to and between the plurality of waveguides, respectively.

16. The circuit of claim 15, wherein the plurality of waveguides each originate from a Mach-Zehnder interferometer, the scattered light in each case being prevented from coupling into an adjacent waveguide by the trenches extending parallel thereto.

17. The circuit of claim 16, further comprising a plurality of scattered light-detecting photodiodes, wherein each photodiode resides in a region between two neighboring trenches.

18. The circuit of claim 17, wherein each photodiode is coupled to an evaluation unit operable to determine the optical power at the output of a scattered light-emitting optical component using the detected scattered light.

19. The circuit of claim 13, wherein the scattered light-reflecting structure comprises a trench in the generally planar substrate, wherein the trench terminates a monitoring waveguide local to the waveguide structure, and further comprising a photodiode at least partially within the trench.

20. The circuit of claim 19, wherein the trench tapers substantially symmetrically in the direction of the monitoring waveguide terminated by the trench,

wherein the trench comprises two side walls that run toward one another and at which scattered light impinging from the planar optical substrate is reflected away from the trench.

21. The circuit of claim 19, wherein the photodiode is premounted on a submount that is placed upside down onto the generally planar optical substrate.

22. A planar optical circuit, comprising:

at least one monolithic or hybrid integrated optical component associated with a generally planar substrate;

a waveguide structure configured to transfer an optical signal associated with the optical component; and

a means for influencing a propagation of scattered light in the planar optical circuit in a targeted manner, the influencing means integrated into the generally planar substrate.